

95. (AMENDED) A system for obtaining mass data comprising:

a mass spectrometer comprising an ion source chamber, wherein the ion source chamber comprises

a sample receiving stage adapted to support a sample support, and

a mechanism to move the sample receiving stage in an x direction and in a y direction perpendicular to the x direction, wherein the x direction and the y direction lie substantially in the same plane;

a laser source in optical communication with the ion source chamber, wherein the laser source is adapted to provide a laser pulse to a sample support in the ion source chamber;

a vacuum lock chamber connected with the ion source chamber, wherein the vacuum lock chamber comprises a sample support holder adapted to support more than one sample support;

a sample support transfer mechanism adapted to:

(a) disassociate a first sample support from the sample receiving stage,
transport the first sample support from the ion source chamber to the vacuum lock
chamber and to associate the first sample support with the sample support holder;
and

(b) disassociate a second sample support from the sample support holder,
transport the second sample support from the vacuum lock chamber to the ion
source chamber and to associate the second sample support with the sample
receiving stage; and

means for maintaining the vacuum lock chamber and the ion source chamber in fluid
communication and under a vacuum controlled environment during disassociation, transportation
and association of the first and second sample supports.

97. (AMENDED) A system for obtaining mass data comprising:

a mass spectrometer comprising an ion source chamber, wherein the ion source chamber comprises

a sample receiving stage adapted to support a sample support, and


a mechanism to move the sample receiving stage;

a laser source in communication with the ion source chamber, wherein the laser source is adapted to provide a laser pulse to a sample support in the ion source chamber;

a vacuum lock chamber connected with the ion source chamber;

a sample storage chamber connected to the vacuum lock chamber, wherein the sample storage chamber comprises a sample support holder adapted to support at least one sample support;

a sample support transfer mechanism adapted to:

 (a) disassociate a first sample support from the sample receiving stage, transport the first sample support from the ion source chamber to the vacuum lock chamber and to associate the first sample support with the sample support holder;
and

(b) disassociate a second sample support from the sample support holder, transport the second sample support from the vacuum lock chamber to the ion source chamber and to associate the second sample support with the sample receiving stage; and

means for maintaining the vacuum lock chamber and the ion source chamber in fluid communication and under a vacuum controlled environment during disassociation, transportation and association of the first and second sample supports.
